Bamboo Nestboxes

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Birds are attracted to gardens, parks and forest plantations where there is peace and quiet, reasonable safety from their enemies, plenty of food and water, comfortable spots to spend the night, and suitable nesting sites. Food and nesting sites are by far the most important of these conditions. In well-wooded areas where trees and shrubs grow, food is usually plentiful both for fruit-eating and for insect-eating birds. Such areas also provide nesting sites to those birds that nest in the branches of trees and in bushes. Nesting sites for hole-nesters are, on the other hand, scarce owing to the artificial management of stands – the removal of decaying branches and old trees which are amenable to boring by the birds or contain holes. Where food is abundant, it is possible to attract a much larger number of birds per hectare by the provision of nestboxes than otherwise. Birds that are attracted by nest-boxes are on the whole beneficial, destroying many insects and other pests. Any agriculturist or horticulturist who attracts birds by providing nestboxes will, therefore, be amply repaid for his time and trouble. Experiments in several countries have also shown the advantages of fostering birds in forest by installing nestboxes. Cohen and Campbell (1957) have compiled the designs of several types of nestboxes in use in the U.K., and have given directions for their construction, siting, fixing, etc. Praeter (1922) has given some earlier designs for nestboxe.

Several species of Indian birds are known to take nestboxes, but very little work has been done in India on this method of attracting birds whether for aesthetic or economic considerations or for scientific study of their life histories. Osmaston (1932) put up 12 boxes in one small area of forest in the Andamans, and 9 of these were occupied by the Shama for nesting. Observations made on some bamboo nestboxes put up in New Forest, Dehra Dun, for the 1958 nesting season are recorded in this paper.

The suitability of bamboo as an artificial nesting site was appreciated several years ago. Writing about the birds of North Kanara, Davidson (1898) remarked that if cut bamboos were placed against the clumps about 270 metres apart, Shamas would nest in them. Bamboo section boxes have been used in a school campus with interesting results (Webb-Peploe, 1948). The Magpie robin and the Yellowthroated Sparrow nested in them, the latter species readily occupying fresh bamboo boxes put up during the nesting season.

Bamboo culms suggest themselves as suitable material for nestboxes because they afford nesting sites to many species of birds under natural and artificial conditions (Hume, 1890; Stuart Baker, 1932-35). Under natural conditions, certain species of Piculets cut out entrance holes just below one node so that the eggs can be deposited deep down on the node below. Bamboos with internal diameters between 5 and 7.5 cm are chosen for the purpose. A pair of Cinnamonbellied Nuthatches are also recorded to have made a hole in a decaying bamboo just below a node, but they filled up the hollow of the bamboo to within a few centimetres of the entrance hole before depositing the eggs. Other species of birds which do not cut holes themselves, also use bamboo culms extensively. The help, unintentional though it be, of man is usually to make the interior of the culms accessible to these birds. Bamboo which has been cut but left leaning against the clump, or lying derelict in the jungle, or standing culms in which holes have been made by mishits, or the cup-shaped ends of the bamboo whose tops have been cut away are used by these birds. When the nest is placed in a standing culm, the space inside is usually filled with various materials from the node below to within a few centimetres of the entrance hole before the nest proper is constructed.

Among artificial situations, bamboo used in buildings is the most popular site. Hollow ends of bamboo supporting the roofs of houses and buildings have been used by the Grey Tit, the House and Yellowthroated Sparrows, and the Magpie Robin. A singular situation for a nest of the Indian Robin was the bamboo of a *dhooly* in the verandah of a house. In New Forest the hollow end of a bamboo, 6.5 cm in internal diameter, supporting the roof of a building, is being used year after year by the House Sparrow.

FIG. 1 a

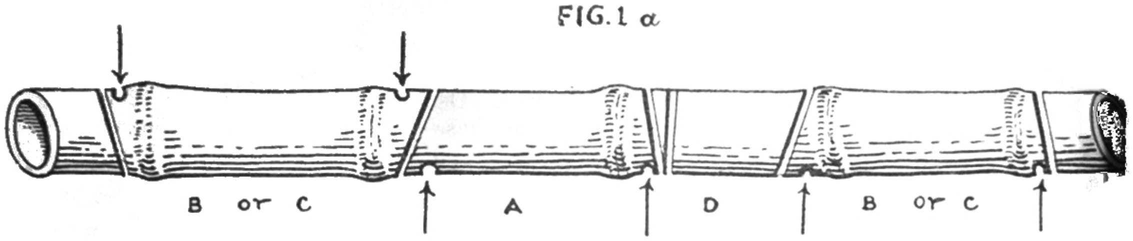
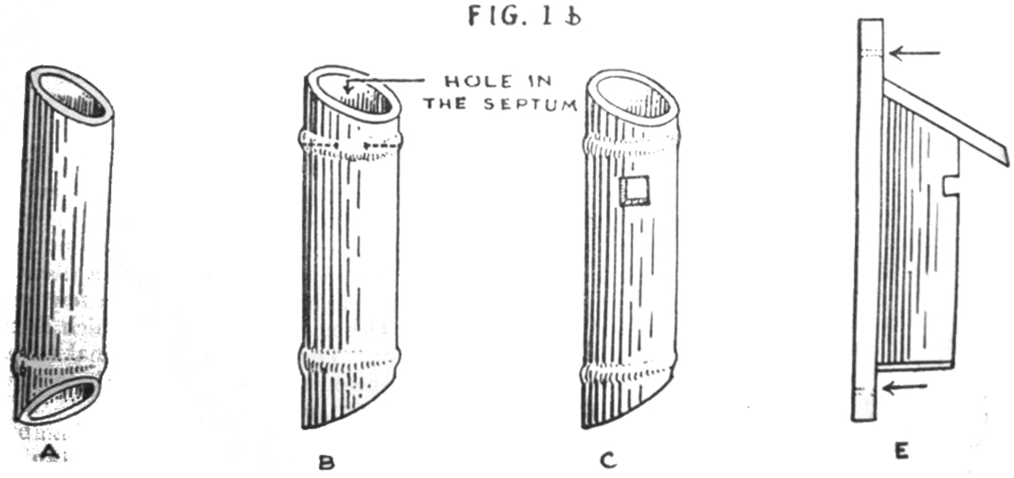


FIG. 1 b



Culms of *Bambusa arundinacea*, *Bambusa polymorpha* and *Dendrocalamus giganteus* were cut into sections as shown in Figure 1a, and the sections were converted to the bamboo sections used by birds in buildings, etc., consisted of an internode cut open at one end. The second type (B, Figure 1b) consisted of a full internode with an entrance hole cut in the septum (partition wall between two internodes) at one end. The third type (C, Figure 1b), similar to the nesting site usually found in bamboo under natural conditions, consisted of a full internode with an opening – circular, square or rectangular – cut in the wall. The hollow segments, open at both ends (D, Figure 1a); were converted into one or other of the above type of boxes by closing one or both ends with plywood and cutting the required entrance hole. Type A boxes can also be readily converted into type B or C in the same manner. Boxes with plywood ends require a batten for nailing them to the side (E, Figure 1b). The batten is best fixed before the plywood ends are added to the box. Sectioning the culms at a slant as shown in Figure 1a, facilitates nailing of the boxes to the site.

A total of 54 bamboo nestboxes, made up of 11 boxes of type A, 14 of type B and 29 of type C, were put up in gardens in New Forest mostly during January to March (1958). This was rather late. Autumn is considered to be the best time for putting up nestboxes. The boxes were fixed on the trucks or lateral branches of trees, and in a few cases on the walls of buildings by iron nails driven through the holes drilled in the boxes or battens for the purpose (Figures 1a and 1b). Iron nails have the disadvantage that they are difficult to withdraw from tree after an year or two (Cohen and Campbell, 1957). If the tree is of timber value, the use of wooden pegs is suggested. Copper nails may also be used, as they do not injure saws. Boxes may also be fixed by means of leather straps or wire. The latter has the disadvantage that in the long run it will get embedded in the tree or rust through.

The nest boxes were installed in fairly sheltered sites to avoid direct sun for long periods. Boxes of type C were always inclined forward to keep out rain. Drainage holes were provided in all A and B type boxes. The internal diameter of the boxes ranged from 5 cm to 16 cm.

Seven species of birds nested in the boxes, a total of 31 boxes being used by them. The dimensions of these boxes, the locations where they were installed, the species nesting in them, and other data are contained in Table 1. Twelve boxes were used either by two different pairs of birds each in succession or by the same pair for two breeds each. Eight boxes, 6 made from section D and two of type A, split open after they were installed and became unsuitable as nestboxes.

Common Mynas (*Acridotheres tristis*) were the first to examine the bamboo nestboxes. They were seen at all the boxes, big and small, and from the end of February they began depositing scraps of paper, feathers, etc., in the larger boxes. The Roller (*Coracias benghalensis*) came next, but all boxes which attracted the bird were occupied by the Common Myna. The latter, in fact lived up to its reputation of being troublesome where nestboxes are concerned, driving away more interesting birds (Inglis, 1943). Another species that examined some nestboxes, but did not use any, was the Greyheaded Myna (*Sturnia malabarica*).

In India the House Sparrow (*Passer domesticus*) does not ordinarily nest in trees. Two boxes installed on trees were, however, taken by this species. The Blackheaded Myna (*Temenuchus pagodarum*) freely entered into squabbles with the Yellowthroated Sparrow (*Gymnorhis xanthocollis*) and the House Sparrow nesting in bamboo boxes. Two pairs fought among themselves and with a pair of House Sparrows for a box occupied by the latter. It was surprising to see the Blackheaded Myna squeeze itself through a hole 3.8 cm in diameter and nest in the confined space of a box 7.5 cm in internal diameter. Two broods were reared in two boxes.

In spite of the usual tendency of the Jungle Myna (*Aethiopsar fuscus*) to nest in colonies, a pair patronized a bamboo box in a shady corner of a garden. Two broods were reared in this box, presumably by the same pair.

Five boxes vacated by families of Common Mynas were taken within a few days by two pairs of Magpie Robins (*Copsychus saularis*), a pair of Blackheaded Mynas and two pairs of Common Mynas. The short interval of two to three days between the fledging of young mynas and re-occupation by pairs of adult Common Mynas indicated that it was not the beginning of second broods. Further, in one instance the pair of Common Mynas that first used the nestbox had been marked with identity rings by the writer. Two other boxes vacated by Common Mynas were again used by the same species after an interval of about three weeks. These were probably second broods.

The Magpie Robin appeared to be able to hold its own against Mynas. A box put up on April 28 was in the possession of a pair of Magpie Robins within two hours despite rival claims by the Common and Jungle Mynas. Two broods of 3 young Magpie Robins each were fledged from this box 45 and 97 days later respectively.

Table 1 – Data on Bamboo Nestboxes occupied by Birds

#	Species	Nestbox type	Internal diameter of nestbox (cm)	Dimensions of entrance hole (cm)	Depth below entrance hole	Height from ground (m)	Approximate inclination of nestbox from the vertical (degrees)	Tree on which fixed	Remarks
1	Grey Tit	B	7.2	3.8 dia.	37	4.2	80	Mango	
2	Magpie Robin	C	14.5	4 x 4	12.5	4.8	5	Shisham	Box detached and dropped to ground by the Rhesus Monkey.
3	Magpie Robin	C	12.5	6 x 4	14	3	10	Shisham	Box installed on April 28. Two broods reared.
4	Magpie Robin	C	12	5 x 5	12	4	5	Mango	
5	Magpie Robin	C	12	5 x 5	15.5	3.9	5	Mango	
6	Magpie Robin	C	14	5.3 x 6.7	13	3.5	5	Jacaranda	Box first used by the Common Myna. See 15
7	Magpie Robin	C	13.3	6.5 x 6.5	32.5	4.7	30	Jacaranda	About 20 cm of the box had been filled in by the Common Myna which used it first. See 21.
8	Magpie Robin	C	15.3	32.5	17	7.8	20	Mango	
9	Blackheaded Myna	B	7.8	3.8 dia.	17	5.3	30	Jacaranda	Two broods reared.
10	Blackheaded Myna	B	9.8	3.8 dia.	22.8	4.2	45	Mango	
11	Blackheaded Myna	C	12	4.7 x 5	12	5	5	Champa	Box installed on May 4.
12	Blackheaded Myna	C	7.5	7.3 x 5.8	62	4.1	80	Mango	Two broods reared.
13	Blackheaded Myna	C	10	6.5 dia.	34.5	6.3	45	Dhak	Box was first used by the Common Myna. See 20. Detached and dropped to ground by the Rhesus Monkey.
14	Common Myna	C	10.8	5.7 x 5.2	16	3.8	5		
15	Common Myna	C	14	5.2 x 6.7	13	3.5	5	Jacaranda	Box reused by the Magpie Robin. See 6.
16	Common Myna	C	13.5	3.5 x 5.5	13.5	3.2	5	Paper mulberry	Two pairs nested in succession.

#	Species	Nestbox type	Internal diameter of nestbox (cm)	Dimensions of entrance hole (cm)	Depth below entrance hole	Height from ground (m)	Approximate inclination of nestbox from the vertical (degrees)	Tree on which fixed	Remarks
17	Common Myna	C	14.0	6 x 6	22.0	3.2	20	Mulberry	
18	Common Myna	C	14.5	6.5 x 6	17.5	3.1	5	Amaltas	
19	Common Myna	C	13.5	6.3 x 6.3	23.5	7.0	20	Amaltas	Box installed on June 15
20	Common Myna	C	10.0	6.5 dia.	34.5	6.3	45	Dhak	Reused by the Black-headed Myna. See 13.
21	Common Myna	C	13.3	6.5 x 6.5	32.5	4.7	30	Jacaranda	Reused by the Magpie Robin. See 7.
22	Common Myna	C	14.1	7 x 6.5	13.8	8.1	5	Lakooch	
23	Common Myna	C	15.0	8 x 7.5	17.0	4.5	5	White Siris	
24	Common Myna	C	14.0	8 x 7.5	33.5	9.7	10	Toon	Two broods reared. About 20 cm of the box filled in by the birds.
25	Common Myna	C	12.0	9 x 8	41.0	7.7	30	Toon	Box detached and dropped to the ground by the Rhesus Monkey.
26	Common Myna	A	16.0	16 dia.	22.3	7.4	5	Shisham	Box was provided with a roof 8 cm above its mouth. Temporarily occupied first by a swarm of bees. Two pairs of Mynas nested in succession.
27	Jungle Myna	B	10.9	5 dia.	32.0	2.9	60	Camphor	Two broods reared.
28	Yellowthroated Sparrow	B	7.6	3.8 dia.	25.5	4.5	45	Champa	
29	Yellowthroated Sparrow	A	6.5	6.5 dia.	48.0	2.8	85	Cypress	
30	Yellowthroated Sparrow	A	7.4	7.4 dia.	28.0	3.3	75	Shisham	
31	House Sparrow	B	7.5	3.8 dia.	19.0	3.0	40	Plum	Two broods reared.
32	House Sparrow	C	5.9	4.6 x 4	47.0	3.9	80	Jacaranda	
33	House Sparrow	C	15.9	5.6 x 6.1	9.0	2.4	45	Wall of a building	Three broods reared.
34	House Sparrow	A	6.6	6.6 dia.	56.0	3.0	70		
35	Five-striped Palm Squirrel	B	7.8	3.8 dia.	27.5	3.2	45	Mango	Entrance enlarged into an irregular shaped hole.
36	Five-striped Palm Squirrel	B	8.0	3.8 dia.	32.0	3.5	80	Shisham	Entrance enlarged into an irregular shaped hole.

Only one box was occupied by the Grey Tit (*Parus major*). This was surprising because the bird is known to nest readily in bamboo under artificial conditions

The Five-striped Palm Squirrel (*Funambulus pennanti*) was an unexpected tenant in two boxes. One box was temporarily occupied by a swarm of bees.

The Rhesus Monkey (*Macaca mulatta*) detached and dropped to the ground three boxes for unknown reasons. Two of these contained either the eggs or nestlings of the Common and Blackheaded Mynas. Fortunately, the young Magpie Robins in the third box had already fledged.

Bamboo nestboxes are extremely easy to make and install and are quite attractive. Bamboo is available in different sizes and its natural colour both in the green and dry states blends well with natural surroundings.

Compared with conventional nestboxes of wood, bamboo boxes have certain disadvantages too. Bamboo is liable to split and become unserviceable as nestboxes. It appears from the results reported in this paper that this disadvantage can be reduced to a minimum if nestboxes are made from full internodes and installed in sheltered locations. Another disadvantage which bamboo boxes share with boxes of several species of wood is nondurability. This can be overcome by the use of preservative (for instance, creosote or *Ascu*) treated bamboo. Durable nestboxes which last for more than one season require to be cleaned after every season. With bamboo boxes this is difficult. Allied to this is the difficulty in inspecting the contents of the box at nesting time. This last disadvantage is likely to be felt only when a detailed study of nesting habits is contemplated.

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